

# This lesson plan teaches about the Oxygen and Carbon Dioxide Cycle

Title – Every Breath You Take

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Subject – Science

Grade Level – 4-7

**\*\*Note** – This lesson plan uses some handout(s) that are not available, however, much of the lesson plan can be completed without the handout(s).

Skills Used

Observing; Inferring; Collecting, Recording, and Interpreting Data;

Measuring; Experimenting

Key Vocabulary

Oxygen – Carbon-Dioxide Cycle, Cell Respiration

Lesson Time

30 minutes, with a 1 hour waiting time

State Goals

11.A.2b, 11.A.2d, 11.A.2e, 11.B.2c, 11.B.2d, 12.A.2a, 12.E.2a, 13.A.2a,

13.A.2c

Conceptual Objective

Students will understand that Oxygen and Carbon-Dioxide cycle between living things in an ecosystem.

Process Objective

Students will perform an experiment which demonstrates the CO<sub>2</sub> cycle.

They will record their predictions and observations on a handout, and answer questions based on the experiment.

Materials

\* goggles

\* 3 beakers for each group

- \* water
- \* droppers
- \* Bromothymol Blue (BTB)
- \* plastic straws
- \* Elodea plants
- \* 2 test tubes for each group
- \* handouts

#### Procedure

1. Ask children: With billions of people and animals all breathing, why don't we run out of Oxygen?
2. Introduce and describe the CO<sub>2</sub> cycle, and define cell respiration.
3. Show the transparency that illustrates this cycle and answer questions.
4. Prepare students to complete the experiment by separating the class into groups of three, passing out supplies.
5. Students should fill one beaker about 2/3 full with water. Then use a dropper to add enough BTB to turn the water blue.
6. Have students use a plastic straw to blow into the water. They should record their observations on the handout. Explain that the blue water will turn yellow because of the presence of CO<sub>2</sub>.
7. Instruct students to put an Elodea plant in a test tube. Have students completely fill the test tube with the BTB solution from the beaker. They should completely fill another test tube with the same solution.
8. Tell students to place their thumbs over the mouth of the first test tube to seal it, turn it upside down, and put it in a beaker so as not to let any air get into the test tube. Repeat this with the second test tube. Wash hands.
9. Help students put the test tubes in a sunny place. Have students predict and record any changes they think might take place.
10. After one hour, have students observe both test tubes and record observations.
11. Clean up the materials.
12. Have the students work independently to answer the analysis questions on the handout.
13. Collect.

#### Evaluation

1. Did students collect and record data about the changes they

observed? Were student's observations accurate?

2. Assess the accuracy of the answers to the analysis questions.

#### Troubleshooting

1. Students are working with a chemical, so the teacher may want to consider reviewing safety precautions to prevent accidents.

2. Students may spill or break something- be sure to have clean-up materials handy.

E-Mail

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